

Single models of multivariate collective models

Ana Cantarinha¹, João T. Mexia², Manuela Oliveira¹,
José G. Borges³, and Elsa Moreira²

¹University of Évora, Portugal

²Nova University of Lisbon, Portugal

³Technical University of Lisbon, Portugal

Abstract

Univariate collective models have an important role in Risk Theory. In this paper we extended models to the multivariate case.

We carry out inference for these models. Our treatment is based on asymptotic distributions which are very convenient since, as it happens in many important situations, we have large samples.

For illustrate our approach we present an application to forest fires in Portugal. Namely, we analyze the number and burned area of wild-fires in Portugal for 5 regions between 1975 and 2007.

References

- [1] Bowers, N.L., H.U. Gerber, J.C. Hickman, D.A. Jones, and C.J. Nesbet (1986). *Actuarial Mathematics*. The Society of Actuaries.
- [2] Fonseca, M., J.T. Mexia, and R. Zmysłony (2003). Estimators and tests for variance components in cross-nested orthogonal models. *Discuss. Math. Probab. Stat* 23(2), 175–201.
- [3] Mexia, J.T. (1990). Best linear unbiased estimates, duality of F tests and Scheffés multiple comparison method in the presence of controlled heterocedasticity. *Comput. Statist. Data Anal.* 10(3), 271–281.
- [4] Mexia, J.T. (1992). *Assymptotic chi-squared tests, design and log-linear models*. Trabalhos de Investigação, 1. Departamento de Matemática, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa.
- [5] Mexia, J.T. (1995). *Introdução à Inferência Estatística Linear*. Centro de Estudos de Matemática Aplicada. Edições Universitárias Lusófonas. Lisboa.
- [6] Parzen, E. (1962). *Stochastic Processes*. Holden-Day, San Francisco.
- [7] Scheffé, H. (1959). *The Analysis of Variance*. John Wiley & Sons.

- [8] Kendall, G.M. (1961). *A Course in the Geometry of n Dimensions*. Charles Griffin and Co. Limited, London.
- [9] Oliveira, T. (1980). Statistical Choice of Univariate Extreme Models. In: C. Taillie et al. (Eds.) *Statistical Distribution in Scientific Work 6*, (367–382).